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DEPARTMENT OF WATER RESOURCES
REVIEW OF THE ADMINISTRATION OF THE
CONSTRUCTION CONTRACT FOR THE
CASTAIC DAM

AUGUST 1974

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August 20, 1974

The Honorable Speaker of the Assembly
The Honorable President of the Senate
The Honorable Members of the Senate and the
Assembly of the Legislature of California

Members:

Transmitted herewith is the Auditor General's report pertaining to the State Department of Water Resources' (DWR) administration of the construction contract for the Castaic Dam under the State Water Project.

DWR awarded this contract to Western Contracting Corporation on the basis of Western's low bid of \$43.4 million. By the time that a final negotiated settlement of \$9 million was paid to Western in 1973, Western had received total payments from DWR of \$63.7 million or \$20.3 million in excess of the bid amount. This excess represented a contract overrun of 47 percent.

While DWR had knowledge of site geology problems, including slide hazard information, DWR did not disclose these problems to Western or to any of the other contract bidders. The courts have consistently held that the failure to disclose relevant information to bidders is a misrepresentation, giving rise to damages to the contractor.

As a direct result of DWR's failure to disclose its knowledge pertaining to the geology problems, and other erroneous misrepresentations, \$13.2 million of the \$20.3 million contract overrun resulted. The \$13.2 million overrun consisted of \$4.2 million of contract change orders and a \$9 million settlement for work performed by Western as a result of DWR's various misrepresentations, including its failure to disclose known problems.

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The contract specifications as prepared by DWR did not require the most economical use of available materials under the contract. Specifically, these specifications failed to require the necessary mixing of excavation materials in order to put this material in usable form.

As a result of the deficient contract specifications, 3.5 million cubic yards of excavation material was wasted by Western, who received payment to excavate and haul this material to waste areas as well as payment to replace the wasted material with other materials.

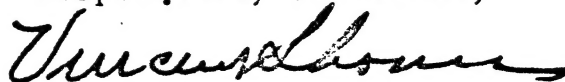
The Auditor General has concluded that the failure to disclose known problems to contract bidders, when viewed in the light of the \$13.2 million overrun which subsequently resulted, was shortsighted, and that the failure to prepare contract specifications requiring the most economical use of available materials, was not in the best interests of the state.

The Auditor General has recommended that DWR, on future construction projects, (1) take measures to ensure that it discloses all known problems to contract bidders as required by the courts, and (2) prepare contract specifications requiring the most economical use of available materials.

In administering the contract awarded to Western, DWR did not obtain actual cost documentation, as required by the contract specifications, to support the \$9 million final negotiated settlement paid to Western. Further, DWR reversed an engineering decision two months after its initial decision had been made. This untimely reversal resulted in a delay of nine months in completing a portion of the construction project. The Auditor General has concluded that these actions represent ineffective contract administration.

The Auditor General has recommended that legislation be enacted which would prohibit contract settlements unless actual cost records to support such settlements are provided by the contractor to the state agency. The Auditor General has further recommended that all engineering decisions affecting executed contracts be made in a timely manner.

Respectfully submitted,



VINCENT THOMAS, Chairman
Joint Legislative Audit Committee

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SUMMARY OF FINDINGS,
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FINDING

The Department of Water Resources did not disclose known problems and erroneously made other misrepresentations to contractors bidding on the Castaic Dam construction contract. Neither did the department prepare contract specifications requiring the most economical use of available materials under the contract. \$13.2 million of the \$20.3 million overrun experienced on the contract resulted.

6

RECOMMENDATIONS

We recommend the Department of Water Resources, on future construction projects, take measures to ensure that they:

1. Disclose to contract bidders all problems known by the department as required by the courts. 10
2. Prepare contract specifications requiring the most economical use of available materials. 10

BENEFITS

Proper implementation of these recommendations could result in lower total costs to the state. 10

FINDING

In administering the contract awarded for the construction of the Castaic Dam, the Department of Water Resources failed to obtain actual cost documentation to support a \$9 million settlement paid to Western Contracting Corporation. Further, the department failed to reverse an engineering decision in a timely manner which resulted in a delay of nine months in completing a portion of the construction project. 11

RECOMMENDATIONS

We recommend that legislation be enacted which would prohibit contract settlements unless actual cost records to support such settlements are provided by the contractor to the state agency. 16

We further recommend that all engineering decisions affecting executed contracts be made in a timely manner. 16

BENEFITS

Implementation of these recommendations will ensure
(1) that contract settlements will be based on actual
costs and (2) could result in the prevention of delays
in completing construction projects.

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INTRODUCTION

Pursuant to a legislative request, we have reviewed the operations of the Department of Water Resources. This report pertains specifically to construction of the Castaic Dam.

The department administers all major state water-related programs except those involving water rights, water quality and water pollution. The department (1) plans for the development and protection of water resources, (2) operates the State Water Project, and (3) promotes public safety by various flood control activities and by supervision to assure that safety standards are complied with in the design, construction and maintenance of dams.

The operations of the State Water Project, whose objective is to transport water from northern California to southern California, account for 88 percent of the department's expenditures. All of the basic facilities of the State Water Project have been completed. Nearly \$1.5 billion has been paid to contractors on the completed contracts awarded for the project. Remaining contracts to be awarded for this project, scheduled to be completed through 1985, are estimated to cost \$139 million, excluding possible future major development work.

The Department of Water Resources has experienced significant cost overruns on construction contracts. Specifically, on 462 completed contracts, the cost overruns were \$155 million, or 15 percent.

In response to concern for these overruns, a departmental study was conducted during 1969-70 to identify causes and potential means for reduction. A variety of causes were identified but, subsequent to this study, significant cost overruns continued.

For example, approximately 42 percent of the total payments to contractors were for the 13 largest contracts, each of which had total payments in excess of \$20 million. The overruns on the seven projects settled prior to the departmental study averaged 17 percent over the contract amount while the overruns on the six projects settled subsequent to the study averaged 20 percent over the contract amounts.

The largest overruns occurred on construction of the Castaic Dam at the southern end of the west branch of the State Water Project. The contract amount was \$43.4 million. The total payment to the contractor was \$63.7 million, or 47 percent over the contract amount.

The following are the bidders and the bid amounts for the Castaic Dam construction contract:

<u>Bidder</u>	<u>Amount</u>
Western Contracting Corporation	\$43,389,724
Joint venture of Green Construction, Winston Brothers Company and Johnson Construction	47,041,023
Joint venture - Castaic Constructors	47,835,497
Joint venture - Vinnell and Associates	47,960,731
Joint venture of Morrison - Knudsen Company Incorporated, Utah Mining and Construction Company, and Brown and Root Incorporated	48,897,930
Guy F. Atkinson Company	51,260,479
Joint venture of Gorden H. Ball Enterprises, Granite Construction Company and Kirst Construction Company	51,651,847
Joint venture of Wunderlich, Erickson, Reed and Martin, Incorporated and Stewart	57,297,021

The department's engineering cost estimate for the work covered by the construction contract was \$65,552,043.

FINDINGS

THE DEPARTMENT OF WATER RESOURCES DID NOT DISCLOSE KNOWN PROBLEMS AND ERRONEOUSLY MADE OTHER MISREPRESENTATIONS TO CONTRACTORS BIDDING ON THE CASTAIC DAM CONSTRUCTION CONTRACT. NEITHER DID THE DEPARTMENT PREPARE CONTRACT SPECIFICATIONS REQUIRING THE MOST ECONOMICAL USE OF AVAILABLE MATERIALS UNDER THE CONTRACT. \$13.2 MILLION OF THE \$20.3 MILLION OVERRUN EXPERIENCED ON THE CONTRACT RESULTED.

The study of the Castaic Dam site was begun in 1955. On the basis of competitive bids, the construction contract was awarded in 1967 to the low bidder, Western Contracting Corporation, in the amount of \$43,389,724. The project was completed in November 1971 with the total payments to the contractor being \$63,681,552 or \$20,291,828 over the bid amount. Included in such total payments was \$9 million paid in 1973 as a result of a negotiated settlement of a claim by Western. Western claimed that it incurred additional costs because of work performed by Western as a result of misrepresentations by the department.

Failure to Disclose Known Problems
To Contract Bidders and Other Misrepresentations

For a period of 12 years prior to the award of the construction contract, the department studied the geology at the site, which was known to be unstable. Various alternatives to solve this stability problem were considered, including separate contract awards to isolate problems caused by the instability, such as slide hazards. However, the documents and information which indicated the department's concern over these problems were not made available to the bidders, and the contract specifications made no reference to such problems.

Specifically, a departmental report stated:

"Also, the Department failed to disclose full and complete knowledge of anticipated problems due to subsurface conditions in the left abutment."

and further stated:

"The documents and information which indicated the Department's earlier concern for the preparation of the left abutment were not made available to the bidders and the specifications and contract did not provide for, or discuss, any special excavation procedures at the left abutment."

According to departmental reports, separate contract awards would have resulted in an additional cost in excess of \$1 million since such multiple awards would have required duplicate handling of material excavated under separate contracts.

As a direct consequence of the failure of the department to disclose its known information pertaining to the geology problems, authorized change orders issued during the project resulted in cost overruns totaling \$4.2 million. These payments were authorized to provide for the extra work occasioned by slides caused by the problems the department had not disclosed to the bidders.

In addition to the \$4.2 million in change orders, the previously noted \$9 million final settlement was based on the various misrepresentations made by the department which included the acts set forth on page 12 of this report as well as the failure to disclose known problems. In other words, the failure to disclose known problems and other misrepresentations resulted in a cost overrun of \$13.2 million.

The courts have consistently held that the failure of a construction agency, such as the Department of Water Resources, to disclose relevant information to bidders is a misrepresentation giving rise to damages to the contractor.

We recognize that if the geology problems had been properly disclosed by the department in the contract specifications, the initial contract price might have been higher and consequently the cost overrun smaller.

However, the disclosure of known problems to contract bidders is required by the courts and we conclude that the department's failure to make such disclosures, when viewed in light of the \$13.2 million of contract overruns which subsequently resulted, was shortsighted.

Contract Specifications Failed
To Require the Most Economical
Use of Available Materials

In the performance of the contract, approximately 3.5 million cubic yards of excavation material was wasted by Western due to deficient contract specifications.

While the Department of Water Resources had represented to the bidders that such excavation material was suitable for filling the embankment, the specifications did not require the necessary mixing of the material to put it in a usable form. According to the department, such mixing would have resulted in suitable embankment materials which then, by the terms of the contract, Western would have been required to use.

While the contract did not require mixing of suitable material, Western could have done so. However, the incentive for Western to waste this material rather than to mix it for use in the embankment was profit maximization, since payments were made under the contract for both (1) excavating and hauling this material to waste areas, and (2) replacing the wasted material with materials from other sources.

The following statement from an internal department report of September 1, 1972 evidences that wasted excavation materials could have and should have been used for embankment purposes, thereby significantly reducing costs to the state. "Contractor mismanaged the Zone 1A and Zone 4 stockpiles. He began early to deposit waste materials making, in effect, spoil piles instead of stockpiles." Approximately 3.5 million cubic yards of excavation material were hauled to waste areas and an equal amount of material brought to the embankment from other sources. It is estimated that this directly resulted in authorized change orders and cost overruns of at least \$2 million, an amount, which while not separately identified, was included in the \$9 million settlement paid to Western.

The specifications should have required the mixing of excavation materials for use in the embankment.

We recognize that requiring the mixing of excavation materials in the contract specifications might have increased the initial contract price, and consequently reduced the cost overruns. However, in our judgment, such additional costs would have been substantially less than the change order costs of wasting suitable material and acquiring additional material which resulted in overruns of at least \$2 million.

We conclude that the failure to prepare contract specifications requiring the most economical use of available materials was not in the best interests of the state.

RECOMMENDATIONS

We recommend the Department of Water Resources, on future construction projects, take measures to ensure that they:

1. Disclose to contract bidders all problems known by the department as required by the courts.
2. Prepare contract specifications requiring the most economical use of available materials.

BENEFITS

Proper implementation of these recommendations could result in lower total costs to the state.

IN ADMINISTERING THE CONTRACT AWARDED FOR THE CONSTRUCTION OF THE CASTAIC DAM, THE DEPARTMENT OF WATER RESOURCES FAILED TO OBTAIN ACTUAL COST DOCUMENTATION TO SUPPORT A \$9 MILLION SETTLEMENT PAID TO WESTERN CONTRACTING CORPORATION. FURTHER, THE DEPARTMENT FAILED TO REVERSE AN ENGINEERING DECISION IN A TIMELY MANNER WHICH RESULTED IN A DELAY OF NINE MONTHS IN COMPLETING A PORTION OF THE CONSTRUCTION PROJECT.

As previously noted, a contract for the construction of Castaic Dam was awarded to Western Contracting Corporation in the amount of \$43.4 million. Subsequent payments to Western by the Department of Water Resources, including a final negotiated settlement of \$9 million, resulted in a contract overrun of \$20.3 million.

While Western had submitted claims for various work performed in the amount of \$26.5 million, they finally agreed to accept the \$9 million settlement.

Failure to Enforce Contract Specifications

The material submitted by Western in support of its claims was not in accord with the following provisions of Section 8(b) of the contract specifications:

"In addition, he shall maintain complete and accurate daily records of the costs of any portion of the work for which additional compensation is claimed, and shall give the engineer access thereto or certified copies thereof, as requested."

On the contrary, Western submitted only estimated costs to support its claims and provided the department with no actual cost data. The department made no efforts to enforce the contract specifications which required Western to submit actual cost data.

The basis of Western's claims totaling \$26.5 million was as follows:

- The streambed sand and gravel materials were not as represented by the Department of Water Resources and, therefore, failed to produce the volume of embankment materials estimated by the department.
- The final cleanup of the foundation was more elaborate and costly than required by the specifications.
- Final foundation excavation extended well beyond the lines in the contract drawings.
- Various slides delayed and disrupted Western's embankment construction and required major revision of the work.
- The closure of the diversion channel was more difficult and costly than anticipated.
- Adequate payment was not made for a change in the specifications regarding embankment materials.

The absence of actual cost records for which the contractor claimed additional compensation resulted in development of a settlement amount by other means. The \$9 million figure finally reached was based on the following two computations:

- The department's Division of Design and Construction, with a few days' assistance of the internal auditor, who did not prepare a report, ascertained that the contractor lost \$14 million on this project. The difference between the contractor's low bid and the average bid of all bidders was \$5.2 million. This was assumed to be the amount the contractor should have lost. The difference of \$8.8 million was assumed to have been caused by the conditions which warranted extra payment.
- The department concluded that the conditions which adversely affected the contractor's operations influenced the cost of performing 11 of the 139 contract bid items of work. The total payments made to the contractor were apportioned among the 139 bid items, and the difference between the amount apportioned to these 11 items and the contractor's estimated costs for these items, after various adjustments, was \$7.5 million. The indirect costs related to the extended time needed to complete the project were estimated to be \$1.5 million. The total of these two computations was \$9 million.

With approximately the same \$9 million figure arrived at by two unrelated computations, the department agreed to pay Western this amount despite the department's failure to enforce the submission of actual data requirements of the contract specifications. The department disregarded such specifications since proper documentation to support the settlement paid to Western was lacking.

Failure to Comply With
Construction Manual

Section 6.4.6. of the department's Construction Manual specifies that proper, fair and legal means are to be used to avoid contractor claims because their processing, deciding and settlement is a costly and time-consuming process. The manual sets forth 15 causes of claims which are to be avoided in the contractor process. Eight of those causes were not avoided by the department in the Castaic Dam contract. Specifically,

- "1. Ambiguities and conflicting language in specifications.
2. Specifications containing language which unnecessarily casts upon the Contractor the risk of large contingencies.
3. Failure of the State to furnish all available information of subsurface conditions. (The courts have consistently held that the construction agency involved is obligated to furnish all known pertinent data; failure to do so is a misrepresentation.)
7. Failure to issue change orders in a timely manner.
8. Indecisions and delays by the State in making final determinations and in advising contractors of those decisions.
9. Unjustified waivers of the time limitations for submitting Notices of Potential Claims, the filing of claims and the submission of protests.
10. Issuance of orders, rulings, instructions and decisions without all of the facts of the case having been determined, given due consideration, and made a matter of official record.
13. Failure of State personnel to keep adequate records to substantiate the Department's positions in its dealings with contractors."

The failure to comply with its own manual contributed to the fact that proper documentation to support the settlement of \$9 million paid to Western was lacking.

Failure to Reverse an Engineering
Decision in a Timely Manner

In 1963, the Department of Water Resources formed the Earth Dams Engineering Consulting Board to give guidance and assistance to the department in the design and construction of earth dams and related facilities. The board is composed of individuals from across the nation who are highly regarded in their individual fields.

During construction of the Castaic Dam, the board recommended the reversal of an engineering decision made by departmental field engineers two months after the decision had been made. The board's recommendation, which was adopted by the department, resulted in an overall delay of nine months in completing that portion of the construction project.

During excavation for the dam foundation, a block of material determined to have been deposited by an ancient landslide was uncovered. A departmental engineering decision was made to leave the block in place and proceed with embankment construction which resulted in substantial amounts of fill being placed on the ancient landslide. Two months later, the Earth Dams Engineering Consulting Board determined the landslide material should have been removed, necessitating the removal of the placed embankment or fill and the removal of underlying unsuitable materials. This removal took an additional four months at which time heavy flood waters filled the excavation. Another three months were then required to de-water the excavation.

So, by reversing an engineering decision two months after it had been effected, a total delay of nine months occurred in completing that portion of the construction project.

In our judgment, the department's failure to (1) enforce its contract specifications, (2) comply with its own construction manual, and (3) reverse an engineering decision in a timely manner represents ineffective contract administration.

RECOMMENDATIONS

We recommend that legislation be enacted which would prohibit contract settlements unless actual cost records to support such settlements are provided by the contractor to the state agency.

We further recommend that all engineering decisions affecting executed contracts be made in a timely manner.

BENEFITS

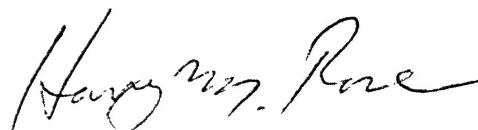
Implementation of these recommendations will ensure (1) that contract settlements will be based on actual costs and (2) could result in the prevention of delays in completing construction projects.

SUMMARY OF COMMENTS OF THE
DIRECTOR OF THE DEPARTMENT OF
WATER RESOURCES AND HIS STAFF

1. The department's engineering estimate at the time of bid opening for the Castaic Dam construction project was \$65,552,043. In other words, the total payments to Western Contracting Corporation were \$1,870,491 less than the department itself had estimated.
2. The Auditor General reported that \$13.2 million of the \$20.3 million overrun resulted from the department's various misrepresentations including its failure to disclose known problems. In fact, not all of the \$13.2 million was directly related to these matters.
3. The contract specifications did not require sufficient testing of excessive materials to determine if such materials were usable for embankment purposes. This was the deficiency of the contract specifications as opposed to the failure to require the necessary mixing of the material to put it in a usable form.
4. Sometimes it is not feasible to accumulate cost data in a manner which would specifically identify it to problems caused by construction settlements such as the \$9 million settlement paid to Western.
5. With regard to the engineering decision which reversed an earlier decision, a flood might have occurred the very next day after the initial engineering decision had been made and therefore a delay would have occurred even if the decision had not been reversed.

Office of the Auditor General

The decision to reverse was made in the best interests of the project's safety. The Earth Dams Engineering Consulting Board periodically reviews engineering decisions but this board can't always be convened to make such reviews on a timely basis.

A handwritten signature in cursive script, reading "Harvey M. Rose".

Harvey M. Rose
Auditor General

Date: August 7, 1974

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